

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
9 December 2004 (09.12.2004)

PCT

(10) International Publication Number  
**WO 2004/107147 A3**

(51) International Patent Classification<sup>7</sup>: G06F 3/00, 3/033

(21) International Application Number:  
PCT/IB2004/050760

(22) International Filing Date: 24 May 2004 (24.05.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
03101586.0 2 June 2003 (02.06.2003) EP

(71) Applicant (for all designated States except US): KONINKLIJKE PHILIPS ELECTRONICS N.V. [NL/NL]; Groenewoudseweg 1, NL-5621 BA Eindhoven (NL).

(72) Inventors; and

(75) Inventors/Applicants (for US only): DE SAMBER, Marc, A. [BE/BE]; c/o Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL). VRANKEN, Roger, A. [BE/BE]; c/o Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL).

WEEKAMP, Johannus, W. [NL/NL]; c/o Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL).

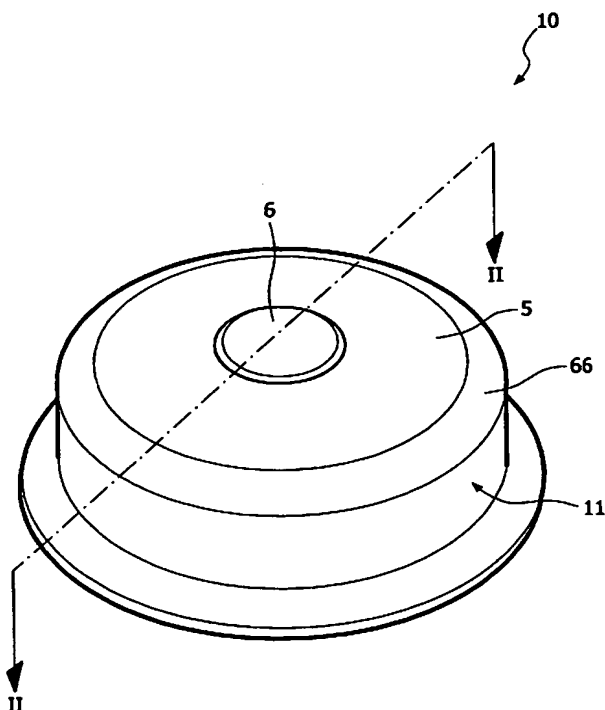
(74) Agent: ROLFES, Johannes, G., A.; Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI,

[Continued on next page]

(54) Title: OPTO-ELECTRONIC INPUT DEVICE, METHOD OF MANUFACTURING SUCH A DEVICE AND METHOD OF MEASURING THE MOVEMENT OF AN OBJECT BY MEANS OF SUCH A DEVICE



(57) Abstract: The invention relates to an opto-electronic input device (10), wherein the input is formed by detected movements of an object (M), which opto-electronic input device is provided with an optical module (11) comprising at least one laser (1) mounted on a carrier plate (4), which laser emits a radiation beam (S) that is guided to a plate (V) close to the object (M) and, after reflection therefrom, causes a change in the resonant cavity of the laser (1) which is representative of the movement of the object (M), and which is measured within the module (11). According to the invention, the plate (V) close to the object (M) comprises, within a projection of the object (M), a first portion (VI) through which the beam (S) can pass and which has a fixed position with respect to the carrier plate (4), and a second portion (V2) which is movable in a direction perpendicular to the carrier plate (4) and which comprises signal means which, when they are moved, provide a signal that is observable by a user of the device (10). In this way, the device (10) provides feedback to a human user

through his tactile sense and preferably also through his auditory sense. The invention also comprises a method of manufacturing such a device and a method of inputting the movement of an object (M) using such a device.

WO 2004/107147 A3



SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)

**Declaration under Rule 4.17:**

— *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE,*

**Published:**

— *with international search report*  
— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

(88) Date of publication of the international search report:  
31 March 2005

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

## INTERNATIONAL SEARCH REPORT

International Application No

PCT/IB2004/050760

## A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 G06F3/00 G06F3/033

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 G06F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, PAJ

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2002/135565 A1 (GORDON GARY B ET AL) 26 September 2002 (2002-09-26) paragraph '0030! - paragraph '0037! paragraph '0043! - paragraph '0045! figures 1,3	1-14
Y	US 2002/104957 A1 (LIESS MARTIN DIETER ET AL) 8 August 2002 (2002-08-08) cited in the application the whole document	1-14



Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

## \* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

28 January 2005

Date of mailing of the international search report

04/02/2005

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer

Ciarelli, N

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No  
PCT/IB2004/050760

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2002135565 A1	26-09-2002	DE 10209797 A1	17-10-2002
		GB 2373837 A	02-10-2002
		JP 2002366297 A	20-12-2002
		TW 563091 B	21-11-2003
US 2002104957 A1	08-08-2002	CN 1408064 T	02-04-2003
		CN 1411587 T	16-04-2003
		CN 1416554 T	07-05-2003
		WO 0237124 A1	10-05-2002
		WO 0237410 A1	10-05-2002
		WO 0237411 A1	10-05-2002
		EP 1261877 A1	04-12-2002
		EP 1334463 A1	13-08-2003
		EP 1334464 A1	13-08-2003
		JP 2004513348 T	30-04-2004
		JP 2004513352 T	30-04-2004
		JP 2004513441 T	30-04-2004
		TW 579484 B	11-03-2004
		US 2003016365 A1	23-01-2003
		US 2003006367 A1	09-01-2003